Reply to Office Action of October 31, 2005   Appl. No.: 09/904,593
Amendment Dated: December 20, 2005   Attorney Docket No.: CSCO-008/4339

Listing of Claims

1   Claim 1 (Previously Amended): A method of providing differentiated services for
2   IP packets transported on an asynchronous transfer mode (ATM) backbone, said method
3   comprising:
4   provisioning a first switched virtual circuit (SVC) and a second SVC on said ATM
5   backbone, each of said first SVC and said second SVC being provisioned as a unicast
6   point-to-point virtual circuit terminating between same end devices;
7   receiving an IP packet;
8   determining whether to send said IP packet on said first SVC or said second SVC
9   according to services desired to be provided for said IP packet; and
10   sending said IP packet on the determined one of said first SVC or said second SVC.

1   Claim 2 (Previously Amended): The method of claim 1, wherein said determining
2   comprises examining a header of said IP packet and wherein said services desired for said
3   IP packet being based on said header.

1   Claim 3 (Previously Amended): The method of claim 2, wherein said determining
2   further comprises maintaining a table indicating a specific one of said first SVC and said
3   second SVC on which to send IP packets having a specific precedence value in a type of
4   service (TOS) field in said header, wherein said IP packet is sent on either said first SVC
5   or said second SVC according to the data stored in said table.

1   Claim 4 (Original): The method of claim 3, wherein said table indicates that a
2   plurality of precedence values are to be mapped to the same SVC.

1   Claim 5 (Original): The method of claim 3, wherein said provisioningcomprises
2   initiating a set up request from a first router to a second router to set up said first SVC,
3   wherein said first router and said second router interface directly with said ATM
4   backbone, wherein said set up request is sent only after reception of a first IP packet to be

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5   sent on said first SVC, wherein said first SVC is provisioned between said first router and

6   said second router.

1   Claim 6 (Original): The method of claim 5, wherein said second router also sends

2   on said first SVC the IP packets having the same precedence value as said first IP packet.

1   Claim 7 (Previously Amended): The method of claim 6, further comprising sending

2   a precedence data from said first router to said second router, wherein said precedence data

3   indicates that the precedence value of said first IP packet is to be associated with said first

4   SVC such that said second router can send packets with the same precedence value on said

5   first SVC.

1   Claim 8 (Previously Amended): The method of claim 7, wherein said precedence

2   data is contained in a signaling set up message representing said set up request.

1   Claim 9 (Original): The method of claim 8, wherein said precedence data is encoded

2   in a broadband higher layer information (BHLI) information element (IE) contained in said

3   signaling set up message.

1   Claim 10 (Original): The method of claim 9, wherein each of said first router and

2   said second router comprises an edge router.

1   Claim 11 (Previously Amended): The method of claim 5, wherein said table stores

2   an IP address, a network service access point (NSAP) of said second router, a precedence

3   value contained in said header, and a SVC identifier in each row.

1   Claim 12 (Withdrawn): A method of providing differentiated services for IP packets

2   transported on an asynchronous transfer mode (ATM) backbone, said method being

3   performed in a receiving router, said method comprising:

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4   receiving in said receiving router a set up request from another router, wherein said

5   set up request requests setting up of a switched virtual circuit (SVC), said another router

6   sending all IP packets having a specific precedence value on said SVC;

7   configuring said receiving router to terminate said SVC in said receiving router;

8   sending an acknowledgment confirming setting up of said SVC; and

9   sending a plurality of IP packets having the same precedence value as said specific

10   precedence value on said SVC.

1   Claim 13 (Withdrawn): The method of claim 12, further comprising receiving a

2   precedence data from said another router data indicating that said specific precedence

3   value is associated with said SVC.

1   Claim 14 (Withdrawn): The method of claim 13, wherein said precedence data is

2   contained in a Signaling set up message representing said set up request.

1   Claim 15 (Withdrawn): The method of claim 14, wherein said precedence data is

2   encoded in a broadband higher layer information (BHLI) information element (IE)

3   contained in said Signaling set up message.

1   Claim 16 (Previously Amended): A router for providing differentiated services for

2   IP packets transported on an asynchronous transfer mode (ATM) backbone, said router

3   comprising:

4   means for provisioning a first switched virtual circuit (SVC) and a second SVC on

5   said ATM backbone, each of said first SVC and said second SVC being provisioned as a

6   unicast point-to-point virtual circuit terminating between same end devices;

7   means for receiving an IP packet;

8   means for determining whether to send said IP packet on said first SVC or said

9   second SVC according to services desired to be provided for said IP packet; and

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10   means for sending said IP packet on the determined one of said first SVC or said

11   second SVC.

1   Claim 17 (Previously Amended): The router of claim 16, wherein said means for

2   determining examines a header of said IP packet to determine whether to send said IP

3   packet on said first SVC or said second SVC and wherein said services desired for said

4   IP packet being based on said header.

1   Claim 18 (Previously Amended): The router of claim 17, wherein said means for

2   determining further maintains a table indicating a specific one of said first SVC and said

3   second SVC on which to send IP packets having a specific precedence value in a type of

4   service (TOS) field in said header, wherein said IP packet is sent on either said first SVC

5   or said second SVC according to the data stored in said table.

1   Claim 19 (Original): The router of claim 18, wherein said table indicates that a

2   plurality of precedence values are to be mapped to the same SVC.

1   Claim 20 (Previously Amended): The router of claim 18, wherein said means for

2   provisioning initiates a set up request to another router to set up said first SVC, wherein

3   said set up request is sent only after reception of a first IP packet to be sent on said first

4   SVC, wherein said first SVC is provisioned to terminate at said another router.

1   Claim 21 (Original): The router of claim 20, wherein said another router also sends

2   on said first SVC the IP packets having the same precedence value as said first IP packet.

1   Claim 22 (Previously Amended): The router of claim 21, further comprising means

2   for sending a precedence data to said another router, wherein said precedence data

3   indicates that the precedence value of said first IP packet is to be associated with said first

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4   SVC such that another router can send packets with the same precedence <u>value</u> on said first

5   SVC.

1   Claim 23 (Previously Amended): The router of claim 22, wherein said precedence

2   data is encoded in a broadband higher layer information (BHLI) information element (IE)

3   contained in a Signaling set up message.

1   Claim 24 (Withdrawn): A receiving router for providing differentiated services for

2   IP packets transported on an asynchronous transfer mode (ATM) backbone, said receiving

3   router comprising:

4   means for receiving in said receiving router a set up request from another router,

5   wherein said set up request requests setting up of a switched virtual circuit (SVC), said

6   another router sending all IP packets having a specific precedence value on said SVC;

7   means for configuring said receiving router to terminate said SVC in said receiving

8   router;

9   means for sending an acknowledgment confirming setting up of said SVC; and

10   means for sending a plurality of IP packets having the same precedence value as

11   said specific precedence value on said SVC.

1   Claim 25 (Withdrawn): The receiving router of claim 24, further comprising means

2   for receiving a precedence data from said another router data indicating that said specific

3   precedence value is associated with said SVC.

1   Claim 26 (Withdrawn): The receiving router of claim 25, wherein said precedence

2   data is encoded in a broadband higher layer information (BHLI) information element (IE)

3   contained in a signaling set up message.

1   Claim 27 (Currently Amended): A computer readable medium carrying one or more

2   sequences of instructions for causing a router to provide differentiated service to IP

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3   packets transported on an asynchronous transfer mode (ATM) backbone, wherein

4   execution of said one or more sequences of instructions by one or more processors

5   contained in said router causes said one or more processors to perform the actions of:

6   provisioning a first switched virtual circuit (SVC) and a second SVC on said ATM

7   backbone, each of said first SVC and said second SVC being provisioned as a unicast

8   point-to-point virtual circuit terminating between same end devices;

9   receiving an IP packet;

10   determining whether to send said IP packet on said first SVC or said second SVC

11   according to services desired to be provided for said IP packet; and

12   sending said IP packet on the determined one of said first SVC or said second SVC.

1   Claim 28 (Previously Amended): The computer readable medium of claim 27,

2   wherein said determining comprises examining a header of said IP packet and wherein said

3   services desired for said IP packet being based on said header.

1   Claim 29 (Previously Amended): The computer readable medium of claim 28,

2   wherein said determining further comprises maintaining a table indicating a specific one

3   of said first SVC and said second SVC on which to send IP packets having a specific

4   precedence value in a type of service (TOS) field in said header, wherein said IP packet

5   is sent on either said first SVC or said second SVC according to the data stored in said

6   table.

1   Claim 30 (Original): The computer readable medium of claim 29, wherein said table

2   indicates that a plurality of precedence values are to be mapped to the same SVC.

1   Claim 31 (Original): The computer readable medium of claim 29, wherein said

2   provisioning comprises initiating a set up request to another router to set up said first SVC,

3   wherein said first router and said another router interface directly with said ATM

4   backbone, wherein said set up request is sent only after reception of a first IP packet to be

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5   sent on said first SVC, wherein said first SVC is provisioned between said first router and
6   said another router.

1   Claim 32 (Original): The computer readable medium of claim 31, wherein said
2   another router also sends on said first SVC the IP packets having the same precedence
3   value as said first IP packet.

1   Claim 33 (Previously Amended): The computer readable medium of claim 32,
2   further comprising sending a precedence data to said another router, wherein said
3   precedence data indicates that the precedence value of said first IP packet is to be
4   associated with said first SVC such that another router can send packets with the same
5   precedence value on said first SVC.

1   Claim 34 (Original): The computer readable medium of claim 33, wherein said
2   precedence data is encoded in a broadband higher layer information (BHLI) information
3   element (IE) contained in a signaling set up message.

1   Claim 35 (Previously Amended): The computer readable medium of claim 33,
2   wherein said table stores an IP address, a network service access point (NSAP) of said
3   second router, a precedence value contained in said header, and a SVC identifier in each
4   row.

1   Claim 36 (Withdrawn): A computer readable medium carrying one or more
2   sequences of instructions for causing a router to provide differentiated service to IP
3   packets transported on an asynchronous transfer mode (ATM) backbone, wherein
4   execution of said one or more sequences of instructions by one or more processors
5   contained in said router causes said one or more processors to perform the actions of:

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6   receiving in said receiving router a set up request from another router, wherein said

7   set up request requests setting up of a switched virtual circuit (SVC), said another router

8   sending all IP packets having a specific precedence value on said SVC;

9   configuring said receiving router to terminate said SVC in said receiving router;

10   sending an acknowledgment confirming setting up of said SVC; and

11   sending a plurality of IP packets having the same precedence value as said specific

12   precedence value on said SVC.

1   Claim 37 (Withdrawn): The computer readable medium of claim 36, further

2   comprising receiving a precedence data from said another router data indicating that said

3   specific precedence value is associated with said SVC.

1   Claim 38 (Withdrawn): The computer readable medium of claim 37, wherein said

2   precedence data is encoded in a broadband higher layer information (BHLI) information

3   element (IE) contained in a signaling set up message.

1   Claim 39 (Previously Amended): A router for providing differentiated services for

2   IP packets transported on an asynchronous transfer mode (ATM) backbone, said router

3   comprising:

4   an inbound interface receiving an IP packet;

5   a memory storing an SVC table indicating that a first switched virtual circuit (SVC)

6   and a second SVC are provisioned on said ATM backbone, each of said first SVC and said

7   second SVC being provisioned as a unicast point-to-point virtual circuit terminating

8   between same end devices;

9   an encapsulator determining whether to send said IP packet on said first SVC or

10   said second SVC according to services desired to be provided for said IP packet, said

11   encapsulator generating a plurality of cells designed for transmission on the determined one

12   of said first SVC or said second SVC; and

13   an output interface sending said plurality of cells on said ATM backbone.

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1   Claim 40 (Previously Amended): The router of claim 39, wherein said ATM

2   encapsulator examines a header of said IP packet to determine whether to send said IP

3   packet on said first SVC or said second SVC and wherein said services desired for said

4   IP packet being based on said header.

1   Claim 41 (Previously Amended): The router of claim 40, wherein said SVC table

2   indicates a specific one of said first SVC and said second SVC on which to send IP

3   packets having a specific precedence value in a type of service (TOS) field in said header,

4   wherein said IP packet is sent according to the data stored in said table.

1   Claim 42 (Original): The router of claim 41, wherein said table indicates that a

2   plurality of precedence values are to be mapped to the same SVC.

1   Claim 43 (Previously Amended): The router of claim 42, further comprising a

2   signaling block for initiating a set up request to another router to set up said first SVC,

3   wherein said set up request is sent only after reception of a first IP packet to be sent on said

4   first SVC, wherein said first SVC is provisioned to terminate at said another router.

1   Claim 44 (Original): The router of claim 43, wherein said another router also sends

2   on said first SVC the IP packets having the same precedence value as said first IP packet.

1   Claim 45 (Previously Amended): The router of claim 44, wherein said signaling

2   block sends a precedence data to said another router, wherein said precedence data

3   indicates that the precedence value of said first IP packet is to be associated with said first

4   SVC such that another router can send packets with the same precedence value on said first

5   SVC.

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1   Claim 46 (Original): The router of claim 45, wherein said precedence data is

2   encoded in a broadband higher layer information (BHLI) information element (IE)

3   contained in a signaling set up message.

1   Claim 47 (Previously Amended): The router of claim 41, wherein said SVC table

2   stores a network service access point (NSAP) address and IP address of an edge router at

3   the next hop associated with each SVC, wherein said encapsulator sending as a key to said

4   table a IP address of an edge router at the next hop and a precedence value in each received

5   IP packet to determine whether to send said IP packet on said first SVC or said second

6   SVC.

       Claims 48 - 51: (Canceled)

1   Claim 52 (New) The method of claim 1, wherein said ATM backbone comprises

2   a plurality of switches, wherein said provisioning includes at least one additional switch

3   between said same end devices for said first SVC, wherein said additional switch is

4   contained in said plurality of switches.

1   Claim 53 (New) The router of claim 16, wherein said ATM backbone comprises

2   a plurality of switches, wherein said means for provisioning includes at least one additional

3   switch between said same end devices for said first SVC, wherein said additional switch

4   is contained in said plurality of switches.

1   Claim 54 (New): The computer readable medium of claim 27, wherein said ATM

2   backbone comprises a plurality of switches, wherein said provisioning includes at least one

3   additional switch between said same end devices for said first SVC, wherein said

4   additional switch is contained in said plurality of switches.

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1   Claim 55 (New): The router of claim 39, wherein said ATM backbone comprises

2   a plurality of switches, wherein said first SVC contains at least one additional switch

3   between said same end devices, wherein said additional switch is contained in said

4   plurality of switches.